**WHAT IS CLAIMED IS:**

1   1.    In a communication system having a first communication

2   station for communicating a communication signal to a second

3   communication station, the communication signal weighted at the

4   first communication station with a first antenna weight for

5   communication to the second communication station by way of a first

6   channel path and weighted at the first communication station with a

7   second antenna weight for communication to the second communication

8   station by way of a second channel path, an improvement of

9   apparatus for verifying closed-loop values indicative of the first

10  antenna weight and the second antenna weight, said apparatus

11  comprising:

12      a sequence estimator coupled to receive indications of

13  the communication signal, once received at the second communication

14  station, said sequence estimator for estimating estimated values of

15  the first antenna weight and of the second antenna weight by which

16  to weight the communication signal, the estimated values formed by

17  said sequence estimator selected responsive to both a memory

18  component and a current component, the estimated values verifying

19  the closed-loop values indicative of the first antenna weight and

20  the second antenna weight.

1    2.    The apparatus of claim 1 wherein the current component

2    responsive, in part, to which said sequence estimator selects the

3    estimated values of the first antenna weight and of the second

4    antenna weight comprises most-recent closed-loop values indicative

5    of the first and second antenna weights.


1    3.    The apparatus of claim 2 wherein the memory component

2    responsive, in part, to which said sequence estimator selects the

3    estimated values of the first antenna weight and of the second

4    antenna weight comprises at least one set of closed-loop values

5    indicative of the first and second antenna weights prior to the

6    most-recent closed-loop values.


     4.    The apparatus of claim 3 further comprising a detector

2    positioned at the second communication station, wherein the closed-

3    loop values indicative of the first antenna weight and the second

4    antenna weight are communicated by the first communication station

5    to the second communication station, said detector for detecting

6    the closed-loop values communicated to the second communication

7    station.

1    5.    The apparatus of claim 4 wherein said sequence estimator

2    comprises a trellis matrice, the trellis matrice defining a

3    plurality of states, each state formed of allowable values of the

4    first and second antenna weights.


1    6.    The apparatus of claim 5 wherein a first state defined by

2    the trellis matrice of said sequence estimator defines a most

3    recent state.


1    7.    The apparatus of claim 6 wherein states defined by the

2    trellis matrice other than the first state define states prior to

3    the most-recent state.


1    8.    The apparatus of claim 7 wherein the estimated values

2    formed by said estimator are formed by a branch metric extending

3    through the trellis matrice.


1    9.    The apparatus of claim 8 wherein the branch metric by

2    which the estimated values are formed by said estimator comprises

3    an optimal length branch metric.

1    10.   The apparatus of claim 8 wherein the trellis of said

2   sequence estimator utilizes MAP metrics to determine the branch

3   metric.


1    11.   The apparatus of claim 1 wherein the communication system

2   comprises   a   radio   communication   system   which   utilizes   WDCMA

3   (wideband code division multiple access) communication techniques

4   and wherein the closed-loop values to which said sequence estimator

5   is coupled to receive indications thereof comprise closed-loop

6   values   of   the   first   and   second   antenna   weights,   respectively,

7   indicative of antenna weighting by which to weight a WCDMA signal

8   which forms the communication signal.


1    12.   The apparatus of claim 11 wherein the radio communication

2   system comprises a cellular communication system wherein the first

3   communication   station   comprises   a   cellular   base   transceiver

4   station,   wherein   the   second   communication   station   comprises   a

5   mobile station, and wherein the closed-loop values to which said

6   sequence   estimator   is   coupled   to   receive   indications   thereof

7   comprise pilot symbol values.

1      13.   The apparatus of claim 12 wherein the indications of the

2   closed-loop values to which said sequences estimator is coupled to

3   receive are representative of closed-loop values when received at

4   the mobile station.


1      14.   The apparatus of claim 12 wherein the estimated values

2   formed by said sequence estimator are used by the base transceiver

3   station to weight the WCDMA signal to maximize the power thereof

4   when received at the mobile station.

1      15.   In a method for communicating in a communication system

2   having   a   first   communication   station   for   communicating   a

3   communication  signal  to  a  second  communication  station,  the

4   communication signal weighted at the first communication station

5   with  a  first  antenna  weight  for  communication  to  the  second

6   communication station by way of a first channel path and weighted

7   at the first communication station with a second antenna weight for

8   communication  to  the  second  communication  station  by  way  of  a

9   second channel path, an improvement of a method for verifying

10  closed-loop values indicative of the first antenna weight and the

11  second antenna weight, said method comprising:

12      detecting,   at   the   second   communication   station,

13  indications  of  the  communication  signal,  once  received  at  the

14  second communication station;

15      estimating estimated values of the first antenna weight

16  and  of  the  second  antenna  weight  by  which  to  weight  the

17  communication signal is weighted, the estimated values selected

18  responsive to both a memory component and a current component, the

19  estimated values verifying the closed-loop values indicative of the

20  first antenna weight and the second antenna weight.

1      16.  The method of claim 15 wherein the current component of

2    the estimated values estimated during said operation of estimating

3    comprises most-recently detected closed-loop values detected most-

4    recently during said operation of detecting.


1      17.  The method of claim 16 wherein the memory component of

2    the estimated values estimated during said operation of estimating

3    comprises at least one set of closed-loop values indicative of the

4    first and second antenna weights prior to the most-recent closed-

5    loop values.


1      18.  The method of claim 17 wherein said operation of

2    estimating comprises:

        forming a trellis matrice defined by a plurality of

3    states, each state formed of allowable values of the first and

5    second antenna weights, and

6        forming a maximum length branch metric therethrough.

1       19.   The method of claim 15 wherein the closed-loop values

2    indicative of the first and second antenna weights, indications of

3    which  are  detected  during  said  operation  of  detecting,  are

4    communicated  to  the  second  communication  station  by  the  first

5    communication station and comprise pilot symbols.


1       20.   The method of claim 15 wherein the communication system

2    comprises a radio communication system operable pursuant to a WCDMA

3    (wideband  code  division  multiple  access)  communication  scheme,

4    wherein   the   first   communication   station   comprises   a   base

5    transceiver station and the second communication station comprises

6    a  mobile  station  and  wherein  said  operations  of  detecting  and

7    estimating are performed at the mobile station.